College of Engineering and Computer Science
FACULTY RESEARCH TALKS
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Zoom talk | Friday, June 12, 2020 | Noon to 1 p.m.

PRESENTER 1:
LUIS ARBOLEDA
Asst. Professor, Civil, Environmental and Construction Engineering

Field Performance, Instrumentation, and Numerical Modeling of Geohazards

A recent trend in the construction of civil infrastructure in congested urban environments is to maximize the use of underground space. Underground construction-induced deformations can largely impact existing urban infrastructure. In this talk, Dr. Arboleda will outline his research accomplishments from multi-disciplinary federal and state funded research projects (NSF, FDOT, CALTRANS) oriented to develop innovative solutions in the field of geotechnical engineering and gain fundamental insight into the behavior of geostructures.

Dr. Arboleda's expertise lies in full-scale field performance and instrumentation of geostructures, including soil-structure interaction. He has developed significant research contributions in the field of analysis and design of supported deep excavations, soil-foundation-structure interaction, geotechnical earthquake engineering, sinkhole failures, laboratory testing of soils, and constitutive modeling of soils and rocks. Before joining UCF, he was an assistant professor at California State University. He earned his Ph.D. from Northwestern University, his M.S. from Purdue University, and worked in consulting on the design, inspection, and rehabilitation of long-span bridges.

PRESENTER 2:
MAHDI ASSEFZADEH
Asst. Professor, Electrical and Computer Engineering

Silicon-Based Terahertz Integrated Sensors and Systems

Dr. Assefzadeh will introduce his research related to developing the next generation of terahertz (THz) integrated sensors and systems with significantly improved performance, energy efficiency, and reconfigurability. His research fundamentally addresses the limitations in conventional THz technologies by introducing novel broadband circuit and system architectures in silicon-based processes to unleash a vast and unique spectrum for a plethora of applications in high-speed wireless links, radar, molecular sensing, hyper-spectral imaging, and ultrahigh-throughput computing.

Dr. Assefzadeh is the director of the UCF Terahertz Integrated Circuits Laboratory. Prior to joining UCF, he was a postdoctoral scholar at the University of California Los Angeles in 2018, and completed his M.S. and Ph.D. in electrical and computer engineering at Rice University in 2014 and 2018, respectively. His honors and awards include the IEEE SSCS Predoctoral Achievement Award in 2018, the IEEE Microwave Graduate Fellowship in 2016, and Best Paper Awards at multiple IEEE conferences. He was also the gold medal recipient at the 38th International Physics Olympiad in 2007.

ZOOM LINK: https://bit.ly/35unuVe | QUESTIONS? Email Jennifer.Sutton@ucf.edu

For more information, and to see previous talks, visit www.cecs.ucf.edu/faculty-research-talks

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PRESENTER 3:
FELIPE VIANA
Asst. Professor,
Mechanical
and Aerospace
Engineering

Using Physics-Informed and Machine Learning Models in Engineering — Uncertainty Quantification and Optimization

Dr. Viana will present a research overview of the Probabilistic Mechanics Lab. He will challenge the myth that machine learning requires large datasets. The focus of the talk will be on hybrid physics-informed machine learning methods and applications thereof in service engineering (with reference to GitHub repositories), and probabilistic low-cycle fatigue-test-plan optimization.

Dr. Viana's work has been applied to new designs and improvement of fielded products with a focus on aircraft propulsion, power generation, and oil and gas systems. Before joining UCF, Dr. Viana was a senior scientist at GE Renewable Energy, where he led the development of computational methods for improving wind turbine performance and reliability. Prior to that role at GE, he spent five years at GE Global Research, where he led and conducted research on design and optimization under uncertainty, probabilistic analysis of engineering systems, and services engineering.

PRESENTER 4:
DIRK REINERS
Assoc. Professor,
Computer Science

Interactive and Immersive Visualization as a Tool for Knowledge Generation and Understanding

This talk will provide an overview of more than 20 years of Dr. Reiners' experiences bringing data into visual and interactive representations for presentation, analysis, knowledge generation and decision making. The talk will describe project highlights in which visualization proved a powerful tool for insight into data and the problems that needed to be solved through that data. Through his research, Dr. Reiners' goal has always been to help researchers and practitioners from many different fields better understand and benefit from their data.

Before joining UCF in January 2020, Dr. Reiners held faculty positions at the University of Arkansas at Little Rock, the University of Louisiana Lafayette and at Iowa State University. He spent more than 10 years working as a research scientist at the Fraunhofer Institute for Computer Graphics in Darmstadt, Germany. He has a B.S. in computer science from Friedrich-Alexander-Universität Erlangen-Nürnberg and an M.S. and Ph.D. from Technical University Darmstadt. His research interests are focused on applications of interactive computer graphics in general, with a special emphasis on 3D graphics and virtual/augmented/mixed reality. This includes software architectures and display hardware systems, as well as a variety of applications areas. He has received funding from federal (e.g. NSF, DHS) and private (e.g. VW, BMW, John Deere, Hytrol, Siemens) organizations.

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